

WHAT IS CLAIMED IS:

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1. A system for treating stenosis in a blood vessel comprising:
a first expandable stent and a first graft overlying the first expandable stent, the
first graft having a first lumen for blood flow and having a first end, a second end, an
intermediate portion between the first and second ends, and an opening in the
intermediate portion;
a second expandable stent and a second graft overlying the second expandable
stent, the second graft extending at an angle to the first graft and having a second lumen
communicating with the first lumen of the first graft, at least a portion of the second graft
extending through the opening in the intermediate portion of the first graft.
2. The system of claim 1, wherein the second graft includes a flange having a
diameter greater than a diameter of the opening in the first graft to retain the second graft.
3. The system of claim 1, further comprising a plurality of petals on the first end of
the first graft.
4. The system of claim 1, further comprising at least one radiopaque marker on the
first graft to indicate the location of the opening.
5. The system of claim 1, further comprising a third graft underlying the first stent
so the first stent is positioned between the first and third grafts.
6. The system of claim 1, further comprising a fourth graft underlying the second
stent so the second stent is positioned between the second and fourth grafts.
7. The system of claim 1, wherein the first graft has an extension extending beyond
a first end of the first stent.

8. A system for treating stenosis in a target blood vessel comprising:
a graft portion having a main portion and a branch portion extending therefrom,
the main portion having a first end, a second end and an intermediate portion between the
first and second ends, the branch portion extending from the intermediate portion at an
angle thereto and in fluid communication with the main portion;
a first stent associated with the main portion and expandable from a first
configuration to a second configuration to retain the main portion in position within the
target vessel; and
a second stent associated with the branch portion and expandable from a first
configuration to a second configuration to retain the branch portion in position within a
branching vessel.
9. The system of claim 8, wherein the branch portion is integral with the main
portion.
10. The system of claim 8, wherein the branch portion is connected to the main
portion.
11. The system of claim 10, wherein the intermediate portion of the main portion has
an opening therethrough and the branch portion includes a flange at a proximal end
having a diameter greater than a diameter of the opening to thereby retain the flange
within the main portion.
12. The system of claim 8, wherein at least one of the first and second ends of the
main portion has a plurality of petals to reduce the radial force against the vessel walls
and the branch portion has first and second ends and a plurality of petals on at least one
of the first and second ends of the branch portion to reduce the radial force against the
vessel walls.

13. The system of claim 8, wherein the first and second stents are positioned within the main and branch portions, respectively, so the main and branch portions expand upon expansion of their respective stents.
14. The system of claim 8, wherein the main and branch portions are positioned within the first and second stents, respectively, and expand upon expansion of their respective stents.
15. The system of claim 13, further comprising a first underlying graft portion underlying the first stent and a second underlying graft portion underlying the second stent.
16. The system of claim 8, wherein the main and branch portions include a longitudinally extending spine and a plurality of curved ribs extending from the spine.
17. The system of claim 16, wherein the ribs terminate at first and second tips which interleave with first and second tips of adjacent ribs.
18. The system of claim 8, wherein the main and branch portions include a series of spines spaced axially and radially with respect to each other.
19. A system for treating stenosis in a target blood vessel comprising:
 - a graft having a first end portion, a main portion and a second end portion, the second end portion being bifurcated to form a main portion extension and a branch portion, the branch portion and the main portion extension being in fluid communication;
 - a first stent positioned within at least the main portion or the first end portion and expandable from a first configuration to a second configuration to retain the graft in position within the target vessel; and
 - a second stent positioned in the branch portion and expandable from a first configuration to a second configuration to retain the branch portion in position within a branching vessel.

20. A stent for treating a stenosis in a target blood vessel comprising a stent body, a first end, a second end, an intermediate portion and a main lumen, the stent being expandable from a smaller configuration to a larger configuration to apply a radial force against the vessel wall, the stent further having an enlarged opening in the intermediate portion configured to allow unobstructed passage of blood into the main lumen of the stent, the opening being aligned with a vessel branching off the target vessel to maintain flow between the target vessel and the branching vessel.
21. The stent of claim 20, further comprising a first graft associated with the stent and having an opening aligned with the opening in the intermediate portion of the stent to allows passage of blood.
22. The stent of claim 21, wherein the opening in the intermediate portion of the stent and the opening in the first graft are configured to receive a second graft therethrough so that the second graft extends outwardly through the openings at an angle to the first graft.

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